

DODCAS 2012: DON Cost Community

Update of the Probability of Program Success (PoPS) Version 2.3, Cost SME Inputs



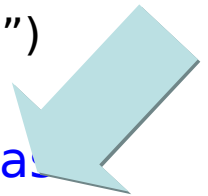
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PoPS 2.3 Update Intentions

- ASN(RD&A) Sys Eng office was tasked to incorporate 200+ updates submitted by PoPS users/stakeholders (e.g. PEO, PM, SYSCOM)
- Updates cut across all PoPS criteria/metrics, not just “TOC” (our area)
- Updates were in the following five categories:
 - Change wording to “Service-generic”
 - OSD and Army desire to adopt the Naval PoPS framework
 - Separate ACAT I criteria from lower ACATs
 - Clarify requirements for those programs below the ACAT I level
 - Incorporate SECNAV’s focus on Energy
 - Affected TOC criteria with FBCE wording/metrics
 - Include acquisition community focus on “Should Cost”
 - Add metric(s) that reflected such focus
 - Collapse “verbose/extended” criteria statements (“decompose”)
 - Break into smaller measurable chunks, or re-word
- Adding-to or modifying existing criteria outside of this list was restricted!!





PoPS 2.3 Cost SME Team

- Mr. Jim Baratta Deputy Director, DASN (Cost & Economics) (NCCA)
- Mr. Don Burlingham Director, MARCORSYSCOM Cost and Analysis Branch
- Mr. Joe Cardarelli NAVAIR 4.2
- Mr. Scott Clark NAVSEA 05C
- Mr. Chris Mushrush Deputy Director, NAVAIR Cost Department (AIR 4.2)
- Mr. Nidak Sumrean Director, NAVSEA Cost Engineering Dept (SEA 05C)
- Ms. Susan Wileman MARCORSYSCOM Cost and Analysis Branch
- Mr. Mourad Yacoub Director, SPAWAR Cost Est Div (SPAWAR 1.6)

(listed alphabetically)

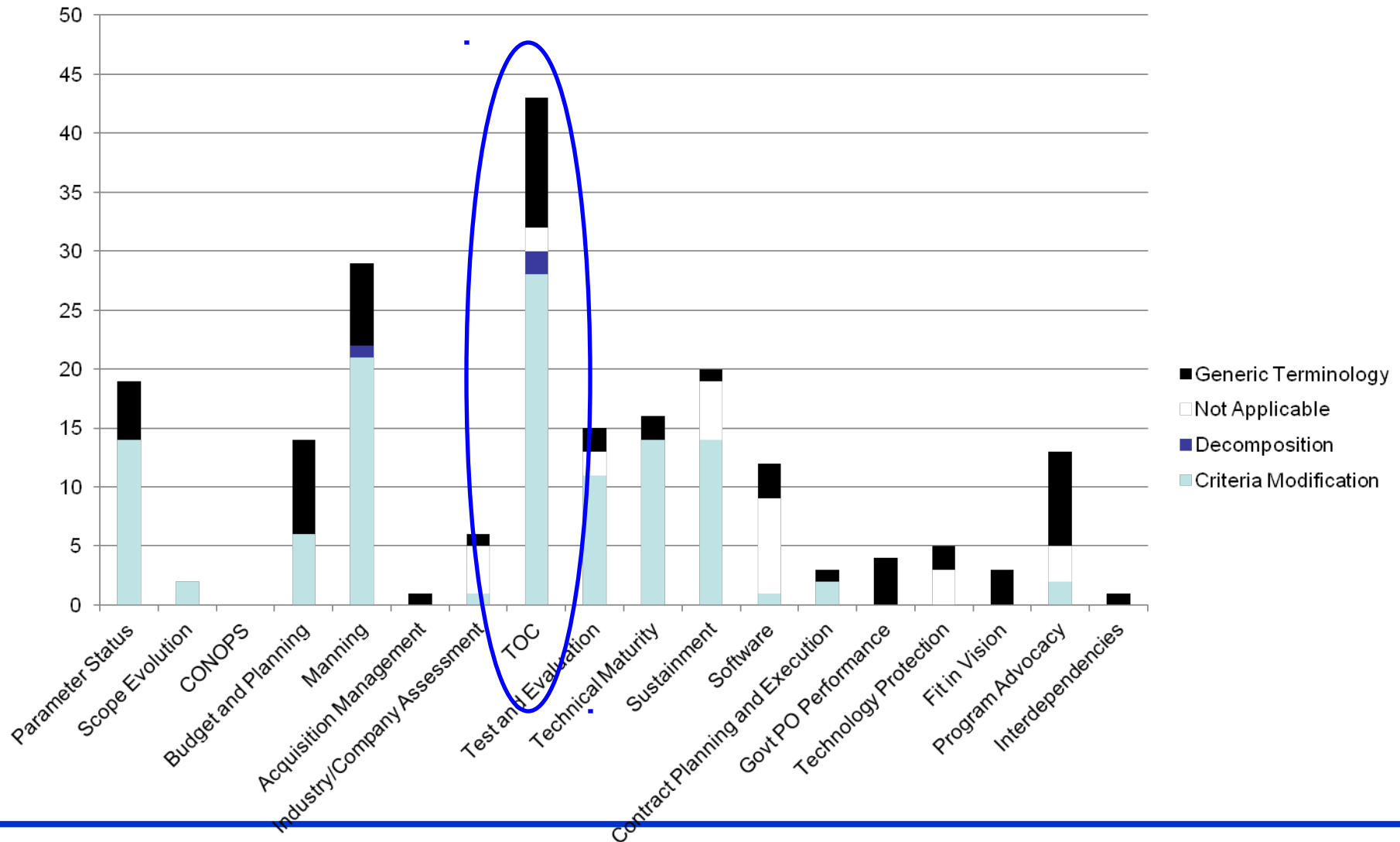
- 43 of the 206 change submissions were in the TOC criteria (most of any)
- Most of the submissions spanned multiple Gates
- The Cost SME team was allowed to “revise” or “reword” the inputs that were submitted to our team by ASN(RD&A).



Criteria Response Breakdown

Total of 206 responses across the PoPS metrics

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SYSTEMS
ENGINEER





PoPS 2.3 for Cost

- Changes of wording to make PoPS “Service-generic”
 - E.g.:
 - Changed “SYSCOM cost organization” to “cognizant program cost organization”
 - Changed “NCCA” to “Service’s independent cost agency.”
 - Cost SME Team accepted these changes (with some modifications)
- Separate ACAT I criteria from lower ACATs
 - Broke some TOC criteria into “ACAT I/IA” and “ACAT II and below” criteria
 - Applied to Gate 6 Sustainment criteria only
 - Other Gate 1-6 criteria already included ACAT I vs lower ACAT breakouts
 - Cost SME Team accepted these changes



PoPS 2.3 for Cost

- Incorporate SECNAV's focus on Energy
 - Created a "sixth" TOC criteria to cover FBCE plans and analysis
 - E.g.:

Gate 1:

The CARD will include the requisite information needed to perform a Fully Burdened Cost of Energy analysis and to develop an estimate of energy consumed (including a description, scope and definition of units of energy) based upon the CONOPS from the ICD.

Gate 4:

Cost Analysis Considerations: A Fully Burdened Cost of Energy (FBCE) analysis and an estimate of energy consumed (in units of energy) were updated based upon the approved CONOPS.

- Each have respective G/Y/R criteria statements
- After some RDA-level arm twisting, Cost SME Team accepted these changes



PoPS 2.3 for Cost

- Include acquisition community focus on “Should Cost”
 - Added metrics for Should Cost “Estimates” and “Management”
 - Cost team agreed with “management” inputs; reworded “estimate” inputs
 - Gate 3 example:

Should-Cost Estimates have been developed, tracked and reported by the Program Manager (PM). All relevant resources to facilitate the development of program Should-Cost estimates have been utilized [e.g. Defense Contract Management Agency (DCMA) assisted overhead and program cost reviews]. A Should-Cost estimate has been developed using a bottoms-up assessment approach; through identification of reductions from the Will-Cost estimate; competitive contracting and contract negotiations; or a combination of these options. Should-Cost estimates have not been used for official program reporting, to set acquisition program baselines, or to set budgets. It is consistent with the defined program of record and has actionable content. Should-cost estimates have evolved as the program has progressed.

- Despite Cost SME Team’s review, DASN(M&B) retracted all inputs; thus OBE



PoPS 2.3 for Cost

- Collapse “verbose/extended” criteria statements

- E.g.:

- Original:

Cost Estimating Process: The cost estimate was completed with conformance to accepted best practices. All steps of the estimating process as listed in the Department of the Navy (DON) Cost Estimating Best Practice policy were completed:

Government led Cost Working-level Integrated Product Team (WIPT) was established and functioning;

Cost WIPT identified and engaged external stakeholders;

(... etc ... etc ... etc)

Risk, uncertainty, and sensitivity analyses were conducted and validated;

Appropriate internal and external reviews validated the estimate;

The estimate was formally and thoroughly documented.

- Revised (accepted):

*Cost Estimating Process: The cost estimate was completed with conformance to approved best practices. All steps of the estimating process as listed in the **Service's Cost Estimating Best Practice policy** were completed. The estimate was formal and thoroughly documented.*

- Cost SME Team accepted these changes (with some modifications)



PoPS 2.3 – Path Ahead

- Adding-to or modifying existing criteria outside of this list was restricted
 - Cost SME team's desire to revise/edit some criteria was out of scope
 - Things like "S-Curve CVs" and other metrics will be addressed in next round
- The full update also incorporate AMMS (Acquisition Management Metrics System), which was accredited in Dec 2011
 - AMMS is a "summary level" comparison metrics tool, across portfolios
 - Not simply a "Gate-specific snapshot" of a single program
- ASN(RD&A) Sys Eng team is compiling and forwarding the whole package to ASN(RD&A) for chop
 - Expect the revised update to be in the tasker system in the coming month
 - Don't hold your breath



Questions?

HOW MUCH WILL IT
COST TO DEVELOP OUR
NEXT GENERATION
PRODUCT?

IT WILL COST
WHATEVER YOU PUT
IN THE BUDGET.

HOW MUCH
SHOULD I PUT IN
THE BUDGET?

ASK FOR THE BIGGEST
NUMBER YOU THINK
WILL GET APPROVED.

I'LL AIM LOW
SO I DON'T GET
YELLED AT DURING
THE EXECUTIVE
BUDGET MEETING.

I REMEMBER A
TIME WHEN THIS
SORT OF THING
WOULD HAUNT ME.

Resource
Sponsor

Program
Manager



Backups





Gate Review Core and Program Health

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| Gate 5 (RFP) | Membership | Entrance Criteria | Goals/Exit Criteria | Briefing Content |
|--|---|--|--|--|
| Purpose: RFP Approval and MS B PCM (if applicable), Assess Affordability Briefer: PM | Chair: ASN(RD&A) Principal: VCNO/ACMC, ASN(FM&C), NOON, N8/DC, P&R/DC, CD&I, N1/DC, M&RA, N2/N6, N3/NS/DC, FP&O, N4/DC, I&L, DON CIO, PDASH, WE Lead &/or USFF/MARFOR, SYSOCOM, PEO/DIRSSP As required: CMR, DC, Avn Advisory: ASN(RD&A)CHSENG, DASHs, N80, N81, N82, N81D, N81L, USFF(NS), HOMC(CL, P&E), OGC, DASH(FMB), DASH(C&E), SYSOCOM Cost Director, Resource Sponsor, DirNIFO, OPA, COTF/MCOTEA | 1. Approved SDS and Technical Data Package 2. Approved Acquisition Strategy 3. Completed Cost Review Board 4. RFP has been reviewed by the Source Selection Authority (SSA) and reviewed by principal and advisory members/staffs 5. Approved IEMP 6. Approved alternate Live Fire Test and Evaluation (LFT&E) plan and an approved LFT&E waiver from full up testing 7. Completed Service review of Life Cycle Sustainment Plan | 1. Approval for RFP release, and the next acquisition event, as authorized by the Acquisition Strategy 2. Authorization to proceed to Milestone B DAB or approval of Milestone B if MDA is ASN (RD&A) 3. Approve APB and Full Funding Certification for MS-B 4. Acknowledgement of CSB recommended capability changes. Approval to proceed to R3B/MROC, or CND/CNC, for assessment and Service approval 5. Satisfactory review of Program Health | 1. Review capability and threat 2. Acquisition Strategy 3. Program Schedule 4. RFP content and issues 5. All critical data deliverables and related intellectual property right issues addressed 6. Demonstration that financial, logistics, and Procurement functions have agreement on the appropriate and compliant level of Acquisition detail 7. MS-B SCP, assumptions, and cost curves by appropriation 8. Cost drivers by phase and by KR include specific cost reduction strategies 9. TOC Planning 10. Cost arrayed in accordance with NCCA policy (i.e. MIL HDBK 881 and OSD CAIG protocols) 11. ILA results and Life Cycle Sustainment Plan 12. Updated assessment of doctrine, organization, training, materiel, leadership & education, personnel, & facilities (DOTMLPF) change requests 13. Job Task Analysis, Front End Analysis, Final Training System Plan, and Manpower Estimate 14. Summarized results of CDR (if applicable) 15. Environmental issues/impacts 16. Review the overall Test and Evaluation program and results of key test events 17. Interdependencies 18. Configuration Steering Board (CSB) 19. Program Health |

= "Briefing slides"
ACAT I

"Core" = Detailed information germane to the Gate Decision

- Will be included in SECNAVINST update

"PoPS" = Holistic view of overall program health and readiness to proceed

- Used during Gate Reviews and anytime Program Health is discussed

= "Metrics and R/Y/G"
All ACATs



Gate Review Core Example of Criteria and Templates

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- For each Gate, clarified Purpose, Membership, updated Entrance/Exit Criteria and Briefing Content
- For each Gate, standardized templates for Briefing Content

| Gate 6 Sufficiency (CPD) | Membership | Entrance Criteria | Goals/Exit Criteria | Briefing Content |
|---|--|---|---|---|
| Purpose: Sufficiency Review and MS C PM (if applicable), Assess Affordability Briefer: RD, PM | Chair: CNO/CMC or designee Principal: VCNO/ACMC, ASN(PM/C), NOON, NS/DC, PA/DC, CNAI, NI/DC, MA/RA, H2/H6, H4/MS/DC, DP40, H4/DC, I&I, DON CIO, H4/DIC4, PDA/RA, MS Lead &/or USSF/MARFOR, SYS/COM, PEO/DIRSSP As required: CNR, DC, Avn Advisory: ASW(RD&A)CHS/NS, DAWA, MPO, M&I, NS2, NS1D, NS2L, USSF (NR), NMIC (CL, PA&E), OSC, DASH (PM), DASH (CAE), JYSCON Cost Directors, Resource Sponsors, DAWDO, COPA, COTF/MCOTEA | 1. Completed Service review of CPD & CONOPS 2. Updated technical data package for LRIP 3. Completed Production Readiness Review (PRR) in support of LRIP 4. Completed Cost Review Board 5. Updated TEMD has been approved | 1. Approval for CPD entry into Joint review, or endorsement of CPD enroute to CNO/CMC for signature 2. Authorization to proceed to DAB or Milestone C approval 3. Approve Full Funding Certification for MS-C 4. Satisfactory review of Program Health | 1. CPD description including KPPs, KSAs and other attributes 2. PRR results in support of LRIP 3. Contract Strategy 4. Updated technical data package for LRIP traced to KPP/KSA capability thresholds 5. Configuration Steering Board (CSB) 6. Review the overall test and evaluation program, results of key test events and system deficiencies discovered through testing activities 7. Program Schedule 8. MS-C SCP, assumptions, and cost risk; S-Curves by appropriation 9. Cost arrayed in accordance with NCCA policy (i.e. MIL HDBK 881 and OSD CAIG protocols) 10. Cost drivers by phase and by KPP/KSA to include specific cost reduction strategies |

CLASSIFICATION (U)

PROGRAM NAME
GATE 6 CPD (CORE)
DATE UPDATED

Page 1 of 2

Briefing Content

- CPD description including KPPs, KSAs and other attributes
- PRR results in support of LRIP
- Contract Strategy
- Updated technical data package for LRIP traced to KPP/KSA capability thresholds
- Configuration Steering Board (CSB)
- Review the overall test and evaluation program, results of key test events and system deficiencies discovered through testing activities
- Program Schedule
- MS-C SCP, assumptions, and cost risk; S-Curves by appropriation
- Cost arrayed in accordance with NCCA policy (i.e. MIL HDBK 881 and OSD CAIG protocols)
- Cost drivers by phase and by KPP/KSA to include specific cost reduction strategies

CLASSIFICATION (U)

Gate 6 CPD Cost Estimate \$5,701M

CLASSIFICATION (U)

| YR | CS |
|------|--------|
| 2025 | 24.3% |
| 2026 | 28.3% |
| 2027 | 32.4% |
| 2028 | 36.5% |
| 2029 | 40.6% |
| 2030 | 44.7% |
| 2031 | 48.8% |
| 2032 | 52.9% |
| 2033 | 57.0% |
| 2034 | 61.1% |
| 2035 | 65.2% |
| 2036 | 69.3% |
| 2037 | 73.4% |
| 2038 | 77.5% |
| 2039 | 81.6% |
| 2040 | 85.7% |
| 2041 | 89.8% |
| 2042 | 93.9% |
| 2043 | 98.0% |
| 2044 | 100.0% |

CLASSIFICATION (U)

SSM

| YR | CS |
|------|--------|
| 2025 | 24.3% |
| 2026 | 28.3% |
| 2027 | 32.4% |
| 2028 | 36.5% |
| 2029 | 40.6% |
| 2030 | 44.7% |
| 2031 | 48.8% |
| 2032 | 52.9% |
| 2033 | 57.0% |
| 2034 | 61.1% |
| 2035 | 65.2% |
| 2036 | 69.3% |
| 2037 | 73.4% |
| 2038 | 77.5% |
| 2039 | 81.6% |
| 2040 | 85.7% |
| 2041 | 89.8% |
| 2042 | 93.9% |
| 2043 | 98.0% |
| 2044 | 100.0% |

Makes separate S-Curve slide for each appropriation.
 Note: Any performance information that cannot be readily gathered from the data table above can be included in this text box. If provided an easy method of conveying more details than the data table may allow.



Gate 5 RFP

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| Gate 5 (RFP) | Membership | Entrance Criteria | Goals/Exit Criteria | Briefing Content |
|---|--|---|--|--|
| Purpose: RFP Approval and MS B PDM (if applicable), Assess Affordability Briefer: PM | Chair: ASN(RD&A) Principal: VCNO/ACMC, ASN(FM&C), NOON N8/DC, P&R/DC N1/DC, M&RA, N3/N5/DC, PP&O, N4/DC, I&L, DON CIO, PDASN, WE Lead &/or USFF/MARFOR, SYSCOM, PEO/DIRSSP As required: CNR, DC, Avn Advisory: ASN(RD&A) CHSENG, DASNs, N80, N81, N82, N81D, N091, USFF(N8), HQM(C, PA&E), OGC, DASN(FMB), DASN(C&E), | 1. Approved SDS and Technical Data Package 2. Approved Acquisition Strategy 3. Completed CRB 4. RFP has been reviewed by the Source Selection Authority and reviewed by principal advisory members/st 5. Approved alternate Live Fire Test and Evaluation (LFT&E) plan and approved T&E waiver from full up testing 6. Completed Service review of Life Cycle Sustainment Plan | 1. Approval for RFP release, and the next acquisition event, as authorized by the Acquisition Strategy 2. Authorization to proceed to Milestone B if MDA is ASN (RD&A) 3. Approve APB and Full Funding Cert for MS-B. 4. Approval to proceed to R3E/MROC, or CNO/CMC, for assessment and Service approval 5. Satisfactory review of Program Health | 1. Review capability and threat 2. Acquisition Strategy 3. Program Schedule 4. RFP content and issues 5. All critical data deliverables and related intellectual property right issues addressed 6. Demonstration that financial, logistics, and the Acquisition Strategy 7. SCP, assumptions, cost risks, S-Curves 8. Cost drivers by phase and by KPP/KSA; cost reduction strategies. 9. Cost drivers by phase and by KPP/KSA to 10. Plan 11. Updated assessment of doctrine, organization, training, materiel, leadership & education, personnel, & facilities (DOTMLPF) change requests 12. Job Task Analysis, Front End Analysis, Final Training System Plan, and Manpower Estimate 13. Summarized results of CDR (if applicable) 14. Environmental issues/impacts 15. Review the overall Test and Evaluation program and results of key test events 16. Interdependencies 17. Configuration Steering Board (CSB) 18. Program Risk 19. Program Health |

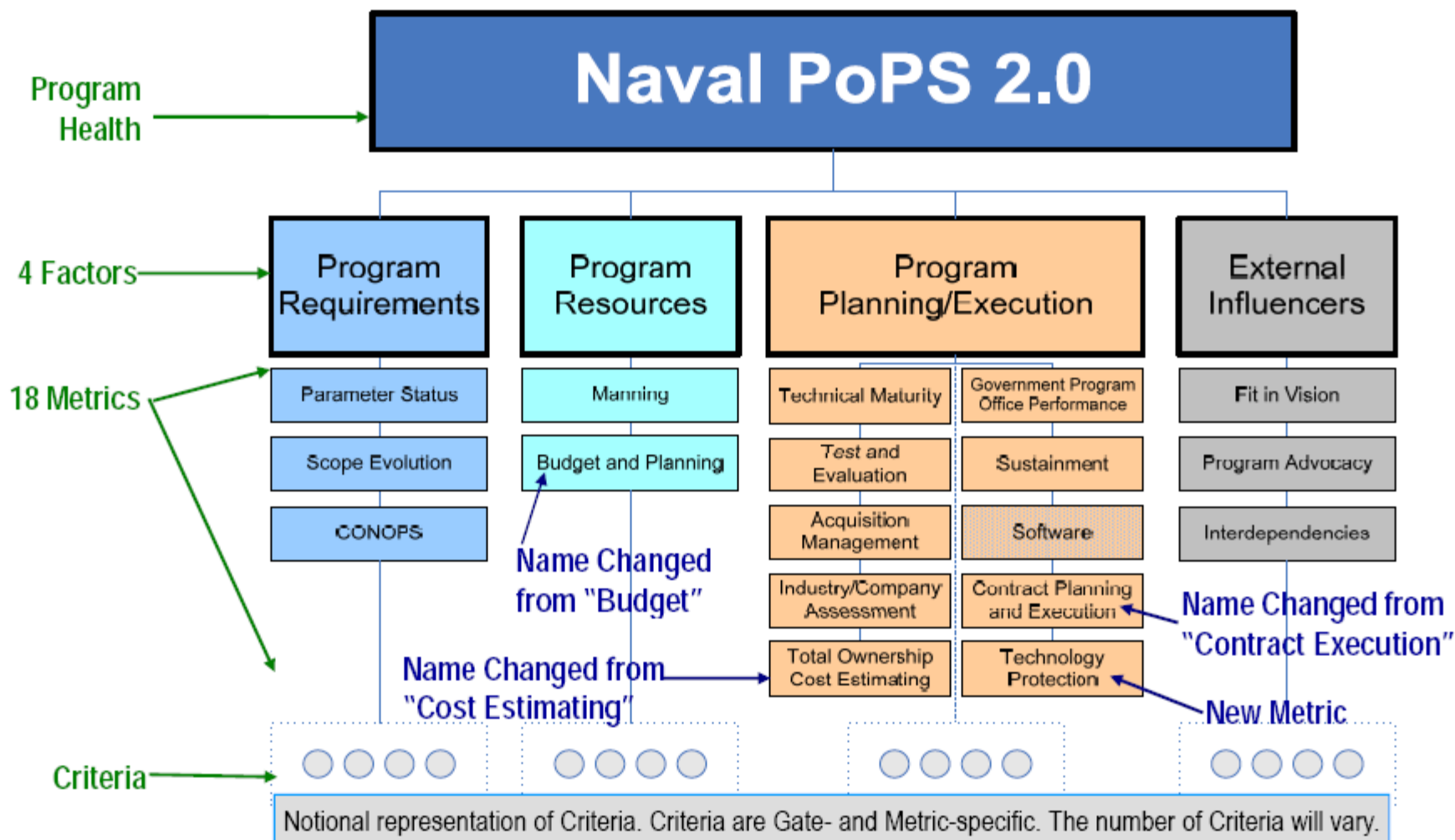
DASN (C&E)
SYSCOM Cost Dir



Naval PoPS v2.0

Gates 1 – 6 Sufficiency (Pre FRP DR)

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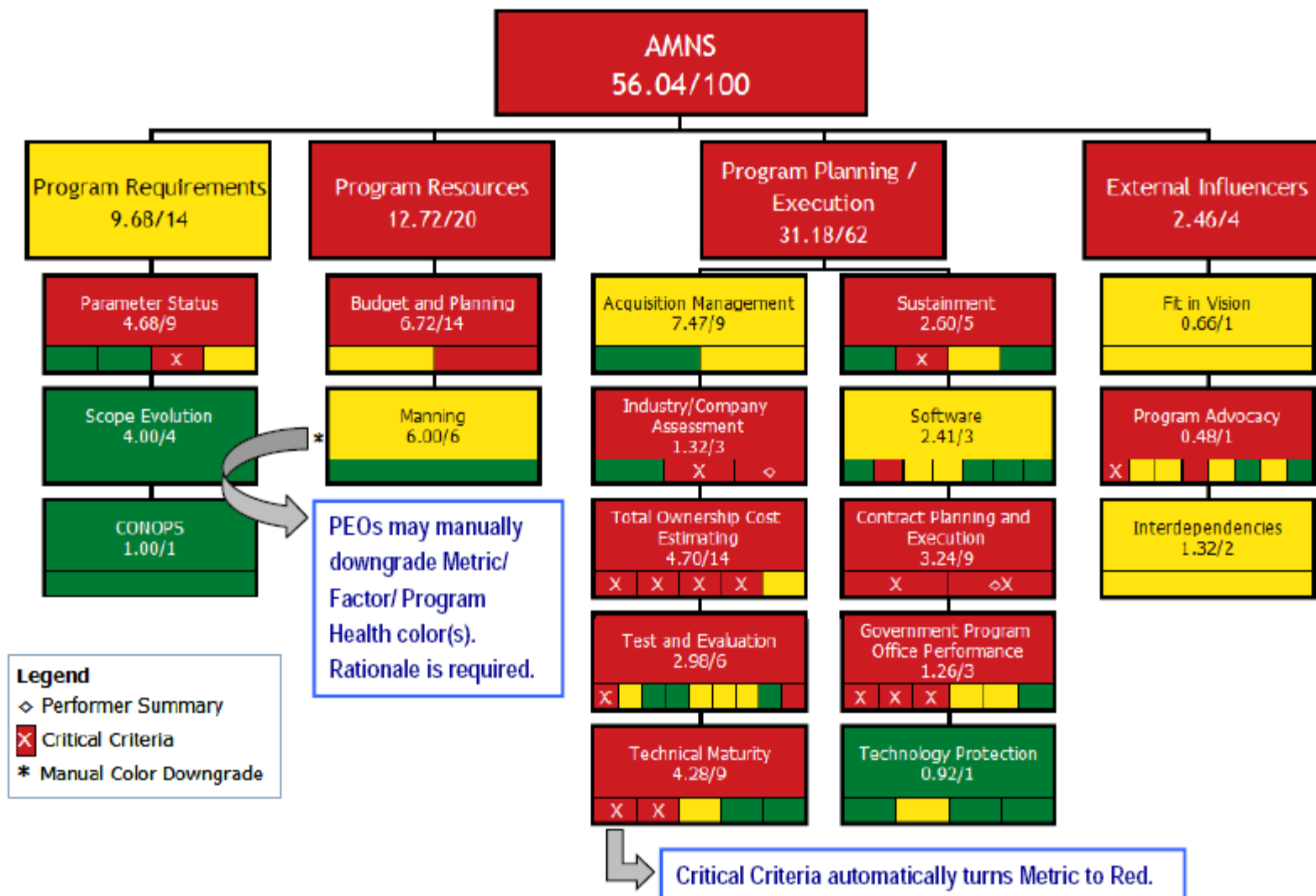




PoPS v2.0 Scoring

(Gate 5 Example with all Critical Criteria Red)

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PoPS 2.0 Criteria - Program Description

How good is the program description? Tech Maturity?"

COST ESTIMATING

COST ESTIMATING: Stability of program definition and documentation, availability of reliable and relevant cost data, maturity of program technology, use of best practices in cost estimating process, availability of independent cost estimates, and cost estimate metrics.

COST ESTIMATING CRITERIA

Program Description Information. Major program documents (CDD, CONOPS, CARD) have been approved by independent* technical or functional oversight authorities and updated with latest information. Other defining documents for the program (SDS, IMS, Acquisition Strategy) are completed. All documents are mature, stable, and thoroughly detailed to form a basis for the cost estimate, with only few minor changes since completing the previous estimate. Technology of the capability being acquired is adequately mature to allow a reliable cost estimate.

All major documents (CDD, CONOPS, CARD) are independently* approved. All other defining documents (SDS, IMS, Acquisition strategy) are completed. All documents have been updated, received and reviewed by an independent cost agency and approved for completing the cost analysis. Only minor, if any, changes to the program since the last cost estimate. All systems and major subsystems assessed at or above TRL7 (or TRL6 for satellite technologies).

One or more major documents (CDD, CONOPS, CARD) is awaiting independent* approval. One or more defining document has minor gaps or inconsistencies which may affect the cost estimate. Moderate volatility has affected the program since completing the last cost estimate (e.g., >5% but <10% change in quantities, 6 month to 1 year change in schedule/milestones, changes in scope of events, non-KPP/KSA changes in requirements). All systems and major subsystems assessed at or above TRL6.

One or more major documents (CDD, CONOPS, CARD) is incomplete or has not been reviewed by the independent* authority. One or more defining document lacks in significant detail or is incomplete. One or more defining document has not been updated to reflect present program definition. Significant volatility in the program since completing the prior estimate (e.g., >10% change in quantities, >1 year change in milestones/ schedule, significant change in scope of events, or significant modification of KPP/KSA/capability requirements). Any system or subsystem is assessed below TRL6.



PoPS 2.0 Criteria – Cost Data

- 5.8.2 **Cost Data.** The cost estimating organization(s) had access to an adequate volume of reliable and relevant cost data for creating the estimate. Historical actual cost and technical data (e.g., technical descriptions, schedule data) existed that was homogenous to the technical and management description of the program. Actual data (e.g., CPRs, BOM, and RMS data) for this program and contractor was collected to a sufficient level of detail.
- “Is relevant, reliable data available?”**
- Reliable, relevant cost data was available. Relevant similar historical programs or systems existed, with reliable, valid cost data, which were used to formulate the estimate. Actual contractor or program cost data allowed establishing mathematical significance in the estimate. All elements and aspects of the cost estimate were able to be credibly calculated.
 - A limited amount of reliable, relevant cost data was available. Relevant similar historical programs or systems existed, but some of that cost data was deemed unreliable for this program. Actual contractor or program cost data allowed establishing mathematical significance in the estimate. All major elements and aspects of the cost estimate were able to be credibly calculated.
 - Reliable data was not available. Actual program or contractor cost data was incomplete, insufficient, or unreliable. Rate data, BOM, and CPRs were not established or could not be verified to support the estimate. Major elements or aspects of the estimate could not be credibly calculated due to lack of reliable cost data.



PoPS 2.0 Criteria - Process

5.8.3 **Cost Estimating Process.** The cost estimate was completed with conformance to accepted best practices. All steps of the estimating process were completed: government led cost estimates were established and functioning; appropriate estimating methodologies were selected; appropriate cost element structures and cross checks were established; cost and schedule drivers were identified; key technical and programmatic assumptions were established and validated; cost data was collected, analyzed, and normalized; data outliers, trends, and sources were reviewed; the point estimate was time-phased and mathematically checked for errors; risk, uncertainty, and sensitivity analyses were conducted and validated; appropriate internal and external reviews validated the estimate; the estimate was formally and thoroughly documented.

"CE Process, Team, Analysis?"

Cost team led by qualified government cost estimators meets regularly; estimating methodology is appropriate for this phase and for available data; cost element structure reflects all elements of the program's life cycle costs; all cost and schedule drivers are reported in the cost estimate; key technical and programmatic assumptions were verified; cost data was analyzed, normalized and processed; data sources, trends and outliers were reviewed and appropriately considered in the estimate; point estimate contains no mathematical errors or inconsistencies in phasing; risk, uncertainty, and sensitivity analyses were conducted and are sufficiently mature; internal and external reviews were conducted and validated the estimate; independent NCCA and SYSCOM headquarters reviews of the estimate were completed; estimate documentation is complete and detailed.

Cost team is led by government personnel who are not cost estimators, or does not meet regularly; estimating methodology is appropriate for this phase and for available data; cost element structure reflects key elements of the program's life cycle costs; key technical and programmatic assumptions were verified; cost data was analyzed, normalized and processed; data sources, trends and outliers were reviewed and appropriately considered in the estimate; point estimate contains only minor



PoPS 2.0 Criteria – Estimate Comparisons

Estimate vs ICE? Stable est over time?"

5.8.4 **Cost Estimate stability and trends.** The cost estimate* for the Average Procurement Unit Cost (PAUC), Program Acquisition Unit Cost (PAUC), and each appropriation for the program significantly changed since the last Gate Review, Milestone (MS) Review, or other officially reviewed estimate. Independent Naval Center for Cost Assessment (NCCA) estimate or assessment [Acquisition Category (ACAT) I] confirms the program estimate*.

The NCCA (ACAT IC/IA only) and System Command (SYSCOM) Cost Organization estimates* have remained within 5% of the last Gate Review, MS Review, or other officially reviewed estimate, and have not exceeded the MS A estimate by more than 10%. The SYSCOM Cost Organization estimate* is within 5% of the NCCA independent estimate (ACAT IC/IA only). A service cost position** is established and approved.

The NCCA (ACAT IC/IA only) or SYSCOM Cost Organization estimate* has grown by >5% but <15% since the last Gate Review, MS Review, or other officially reviewed estimate, or has exceeded the Milestone A estimate by more than 10% but less than 20%. The SYSCOM Cost Organization estimate* is not within 5% but is within 15% of the NCCA independent estimate (ACAT IC/IA only). A service cost position** is being established but is not approved.

The NCCA (ACAT IC/IA only) or SYSCOM Cost Organization estimate* has grown by >15% since the last Gate Review, MS Review, or other officially reviewed estimate, or has exceeded the MS A estimate by more than 20%. The SYSCOM Cost Organization estimate* is not within 15% of the NCCA independent estimate (ACAT IC/IA only). A service cost position** is not being established, or significant unreconciled differences exist between the NCCA assessment and the SYSCOM cost estimate (ACAT ID only).



PoPS 2.0 Criteria - Measures

Assessment of Risk/Uncertainty?"

5.8.5 Cost Estimate measures. Measures of statistical significance validate the credibility of the estimate.



The coefficient of variation of the cumulative distribution function curve (S-curve) of the estimate for each appropriation is greater than 25% and less than 35%.



The coefficient of variation of the cumulative distribution function curve (S-curve) of the estimate for any appropriation is less than 25% but greater than 15% or less than 50% but greater than 35%.



The coefficient of variation of the cumulative distribution function curve (S-curve) of the estimate for any appropriation is less than 15% or greater than 50%.



Cost Estimate Maturity vs. Gate Reviews

